-HIGHWAY LIGHTING ACCIDENT WARRANT ANALYSIS WORKSHEET

Route: _____ Location: _____

Municipality: _____ County: _____

Analysis Made By: _____ Date: _____

1. Determination of Need for an Accident Analysis

This analysis section must be completed for each individual intersection, interchange, or continuous section of roadway of 1.5 km (1 mi) or less excluding any intersections or interchanges. Intersections, interchanges, or continuous sections of roadway should not be combined for a single analysis for all.

a.	Accident Study Year:	_____		_____		_____		TOTAL
b.	Number of months studied in each year:	____	+	____	+	____	=	_____
c.	Number of Nighttime Accidents:	____	+	____	+	____	=	_____
d.	Number of Daytime Accidents:	____	+	____	+	____	=	_____
e.	Total Number of Accidents: (Line 1c + 1d.)	____	+	____	+	____	=	_____
f.	Night to Day Ratio: (Line 1c divided by 1d.)	____	+	____	+	____	=	_____
g.	Number of Years Studied: (Line 1b Total divided by 12.)	____	+	____	/	12	=	_____
h.	Average Number of Nighttime Accidents Per Year: (Line 1c Total divided by Line 1g.)			____	/	____	=	_____
i.	Average Number of Daytime Accidents Per Year: (Line 1d Total divided by Line 1g.)			____	/	____	=	_____
j.	Average Night to Day Ratio: (Line 1h divided by Line 1i.)			____	/	____	=	_____

2. Type of light standards to be used: (Check One)

☐ Conventional Unit Only
☐ Combination Tower and Conventional Units

3. Type of Lighting System: (Check One)

☐ Intersection
☐ Partial Interchange
☐ Full Interchange

4. Installation Costs: (Use Appendix A)

a. Construction Cost: $_____

b. Mobilization-Demobilization and Maintenance of Traffic Costs:
(Line 4a) $_____ x 0.07 = $_____

c. Design and Construction Administration Costs:
(Line 4a) $_____ x 0.10 = $_____

d. Total Installation Costs:
(Line 4a + 4b + 4c) $_____

5. Annual Operating and Maintenance Cost: (Use Appendix B)

a. Operation and Maintenance Costs: $_____

b. Administration Costs:
(Line 5a) $_____ x 0.10 = $_____

c. Operating and Maintenance Cost Per Year:
(Line 5a + 5b) $_____

d. Total Operating and Maintenance Cost = Present worth of costs over the 20-year service life.

= Yearly Cost (Line 5c) x Present Worth Factor

= $_____ x 13.5903 = $_____

e. Total Cost = Total Installation Cost + Total Operating and Maintenance Cost

= (Line 4d) $_____+ (Line 5d) $_____ = $_____

6. Annual Safety Benefits: (Use Appendix C)

a.	Accident Study Year (Same as Section 1)	_____		_____		_____		TOTAL
b.	Number of Months Studied in Each Year (Same as Section 1)	____	+	____	+	____	=	_____
c.	Number of Vehicles Involved, Nighttime Only	____	+	____	+	____	=	_____
d.	Number of Injuries, Nighttime Only	____	+	____	+	____	=	_____
e.	Number of Deaths, Nighttime Only	____	+	____	+	____	=	_____
f.	Number of Years Studied: (Line 6b Total divided by 12.)	____	+	____	/	12	=	_____
g.	Average Number of Nighttime Vehicles Involved Per Year: (Line 6c Total divided by Line 6f.)			____	/	____	=	_____
h.	Average Number of Nighttime Injuries Per Year: (Line 6d Total divided by Line 6f.)			____	/	____	=	_____
i.	Average Number of Nighttime Deaths Per Year: (Line 6e divided by Line 6f.)			____	/	____	=	_____

j. Accident Reduction Factor (from Appendix D): = _____

k. Reduction in Accident Costs Per Average Year due to Highway Lighting Being Installed:

Type of Damage: (No./Yr.)		Unit Cost (Appendix C)		Reduction Factor		Savings Per Year
Vehicles (Line 6g)	_____ x	$_____	x	_____	=	$_____
Injuries (Line 6h)	_____ x	$_____	x	_____	=	$_____
Deaths (Line 6i)	_____ x	$_____	x	_____	=	$_____

Total Yearly Benefit: (sum of all three lines) $_____

l. Assumptions:

Service Life	=	20 Years
Interest Rate	=	4%
Inflation Rate	=	0%
Net Salvage Value	=	$0

m. Traffic Growth Factor = _____ (from Appendix E)

n. Total Benefits:

B = Present worth of the benefits over the 20-year service life
= Total Yearly Benefit (Line 6k) x Present Worth Factor x Traffic Growth Factor (Line 6m)

= $_____ x 13.5903 x _____

= $_____

7. Benefit / Cost Ratio, B/C:

B/C = (Line 6n divided by Line 5e)
= $_____ / $_____

Click When Done Clear Data